

REMARKS

Applicants thank the Examiner for the very thorough consideration given the present application. Claims 1-15 and 30-34 are pending in the present application. Claims 1 and 34 are independent. Claim 1 has been amended and claim 34 has been added.

Reconsideration of this application, as amended, is respectfully requested.

Drawings

Applicants thank the Examiner for withdrawing the objection to the drawings.

Rejection under 35 USC 112

Applicants thank the Examiner for withdrawing the rejection under 35 USC 112, first paragraph.

Rejection under 35 USC 103

Claims 1-15 and 30-33 stand rejected under 35 USC 103(a) as being unpatentable over Adriaenssens et al. (US 5,997,358, hereafter Adriaenssens) in view of McClanahan et al. (US 5,396,397, hereafter McClanahan). This rejection is respectfully traversed.

Applicants admit that the assignee's prior patent to Adriaenssens shows a modular connector with circuitry features for canceling crosstalk. However, Adriaenssens fails to show most of the claimed subject matter of claim 1, including:

a first section of said PCB having a first dielectric constant (DK);
a second section of said PCB having a second DK lower than the first DK,
and provided above or below said first section; and
at least one crosstalk compensation element utilizing said first section as a
dielectric of a capacitor to provide compensating crosstalk to offset the original
crosstalk, wherein said circuit elements are provided in said second section.
(Underlining shows language added by the present amendment).

The Examiner relies on McClanahan to supply the deficiencies of Adriaenssens and asserts that it would have been obvious to have combined the teachings of McClanahan into the modular connector of Adriaenssens. Applicant must contest these assertions regarding Applicants' claim 1 for several reasons.

First Argument

On page 4, line 116 through page 5, line 3, the Examiner states:

The teachings from McClanahan are about dividing a circuit board into sections having different dielectric constant to achieve field (field control layers) and circuit isolation (isolating structures) in order to minimize EMI and minimum circuit/environmental interactions and parasitics (col.3:37-52).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the teachings about the high dielectric field control layers from McClanahan on the PCB of Adriaenssens to make the first section to have a first dielectric constant (high DK) and the second section to have a second dielectric constant (low DK) in order to minimize EMI and minimum circuit/environmental interactions and parasitics. (Emphasis Added).

Applicants agree that McClanahan is concerned with EMI shielding, and provides certain layers on a printed circuit board with a high dielectric constant so as to create shielding layers. However, it would not have been obvious to one of ordinary skill in the art to have desired to

provide such high dielectric shielding layers on the printed circuit board of Adriaenssens' modular connector.

The Examiner asserts that one of ordinary skill in the art would have desired to minimize EMI and circuit interactions and parasitics. However, providing such elaborate measures on the printed circuit board to prevent EMI effects on the circuit components would not have been obvious when it is considered that the circuit components mounted on the printed circuit board of Adriaenssens are connected to a plurality of thin wire contacts extending far away from the printed circuit board. Such unshielded thin wire contacts are essentially antennas to receive and transmit EMI. One of ordinary skill in the art would find it to be a wasted expense to provide EMI shielding layers within the printed circuit board of Adriaenssens when the circuit components on the printed circuit board are connected to these unshielded wire contacts.

Therefore, this rejection should be reconsidered and withdrawn.

Second Argument

On page 5, lines 5-9, the Examiner states:

Applicants should be noted that the limitation that original cross talk occurs between at least some conductors of the mating connector and that the crosstalk compensation element utilizes the first section to provide compensating crosstalk to offset the original crosstalk is interpreted to only require the ability to so perform. In the case of product claim, only the structure of the claim distinguishes over the prior art.

Applicants agree with the Examiner's statement, but notes that if Adriaenssens and McClanahan were combined, as suggested by the Examiner, the combination would not "have the ability" to perform the compensating crosstalk recitation of Applicants' claim 1. In other words, the high dielectric layers in the circuit board of McClanahan have a dielectric constant of about 100 in order to shield EMI fields. Such a high dielectric constant material is not suitable "as a dielectric of a capacitor" with an ability to provide compensating crosstalk in a modular

connector, as required by claim 1. Such a high dielectric constant material is effective to shield EMI fields, not as a dielectric material of a capacitor, as presently claimed.

By the standard stated by the Examiner, the combination of Adriaenssens and McClanahan, as suggest by the Examiner, would not present a structure having an ability to perform as required by claim 1. Therefore, this rejection should be reconsidered and withdrawn.

Third Argument

Previously, the Examiner rejected Applicants' claims as being unpatentable over McClanahan in view of Celella et al. The Examiner asserted that McClanahan showed the printed circuit board with layers of different dielectric materials and that Celella et al. showed a modular connector with crosstalk compensation. Now, the Examiner has changed the combination of references to Adriaenssens in view of McClanahan, with Adriaenssens showing the modular connector with crosstalk compensation and McClanahan showing the printed circuit board with layers of different dielectric materials. Applicants' arguments in the response filed January 31, 2007 as to why it would not be obvious to use McClanahan's printed circuit board in combination with a modular connector (like Celella et al.'s. connector or Adriaenssens' connector) are applicable in this response and are herein incorporated by reference for the purpose of preserving these arguments for any necessary appeal to the Board of Patent Appeals and Interferences.

Therefore, this rejection should be reconsidered and withdrawn.

Claim 30

The patentability of claim 30 should not rise or fall with the patentability of claim 1. Claims 30 recites:

30. The apparatus of claim 1, wherein the first DK is in the range of 4.0 – 5.0, and the second DK is in the range of 2.5 – 3.5.

On page 8, line 18 through page 9, line 10 of the last Office Action, the Examiner states that the choice of materials for the dielectric layers of McClanahan may be varied depending upon particular applications, and continues:

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include the first DK in the range of 4.0-5.0 and the second DK in the range of 2.5-3.5 in order to provide a predetermined capacitance for a specific application. Furthermore, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

The principal of *In re Aller* is inapplicable to the present circumstances. An example of the principal of *In re Aller* would be where a prior art reference states that it is important to heat cooking oil to 350 to 450 degrees Fahrenheit to cook fish. If an Applicant submits a claim to cooking fish at a temperature of 380- 390 degrees Fahrenheit to improve taste, *In re Aller* could be cited to reject the claim. The Applicant is merely reciting the optimum or workable range (380 to 390 degrees) “within the general conditions” (350 degrees to 450 degrees) disclosed in the prior art.

As pointed out in Applicants’ response filed January 31 2007, McClanahan does not disclose the general conditions of dielectric layers which are useable for capacitors in crosstalk compensation. McClanahan discloses that the invention is directed to “electromagnetic interference (EMI) shielding dielectric layers.” Col. 1, lines 10-11. The EMI shielding layer has a dielectric constant of about 100. See col. 3, line 20.

It would not have been obvious to one having ordinary skill in the art to have used the McClanahan multilayer PCB of the RF EMI shielding art in combination with a modular connector as taught by Adriaenssens (or Celella et al.) to compensate for conductor-to-conductor crosstalk in the connector art. Applicants' invention is dealing with compensating elements, e.g. capacitors, to compensate for offending crosstalk. Such capacitors require much smaller dielectric constants, for example on the order of 4 or 5, as recited in claim 30. Such lower dielectric constants would not be seen as EMI shielding layers, which have dielectric constants on the order of 100 (as described by McClanahan in col. 3, line 20). Indeed, the high dielectric constant layer of Applicants' invention has a dielectric constant (4 or 5) which is actually lower than the so-called "low dielectric constant" layer (7 or 8) of McClanahan et al.'s PCB, again illustrating the diverse nature of the claimed PCB (useful in forming crosstalk compensating structures) and the PCB of McClanahan (useful for EMI shielding).

Setting the high dielectric material's constant in the range of 4.0 to 5.0, as recited in Applicants' claim 30, cannot be characterized as selecting an optimum or workable range within the "general conditions" of the prior art of McClanahan. McClanahan has a "general condition" that the high dielectric material's constant is about 100 and a "general condition" that the material serve as a shielding layer. A material having a dielectric constant in the range of 4.0 to 5.0 is not an effective shielding layer (and cannot be fairly characterized as an optimum or workable range of a dielectric constant within the general range of dielectric materials functioning as shielding layers), and is in fact lower than what McClanahan considers to be the material with a low dielectric constant, where the circuit elements "to-be-shielded" are employed.

Therefore, the rejection of claim 30 should be reconsidered and withdrawn.

New Claim 34

New independent claim 34 has been added and is related to, and supported by, dependent claim 30. Claim 34 recites a combination wherein the first DK is less than 5.0, and the second DK is less than the first DK. Claim 34 should be considered allowable for reasons similar to those set forth above regarding dependent claim 30.

Conclusion

In the event that any outstanding matters remain in this application, the Examiner is invited to contact the undersigned at (703) 621-7140 in the Washington, D.C. area. All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 50-3828 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Dated: July 26, 2007

Respectfully submitted,

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